Analyzing Nursing Home Characteristics: Issues In Comparing State And Federal Data Sources.

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Introduction

Aging of the population is increasing the importance of long-term care and nursing homes as a component of the health care system in the United States. Policy planners need to fully understand the nature of the industry, as well as emerging trends.

Nursing homes, as we know them currently, are a relatively new entity on the health care landscape. The present long-term care system largely emerged in the early 1970s following the impact of Medicare. Earlier facilities like board and care homes had sprouted up after the passage of social security, along with was activity by some churches and fraternal groups who had built retirement centers for their members.

Since nursing homes are only a couple of decades old and changes in regulations and financing impacting them are being seen with increasing frequency, nursing homes could well change in form or format into the next century, when the elderly portion of the population will move toward one-fifth as baby boomers edge into their senior years.

Planning for an essential service like long-term care requires accurate information. Conjecture cannot take the place of data vital for shaping the nature of future nursing homes. However, despite the importance of nursing homes as part of health care, no comprehensive information system is in place nor are basic definitions of data elements accepted in a widespread manner. The quality of planning suffers when information is limited. For instance, the impact on nursing homes of recent changes in Medicare reimbursement on hospitals needs to be known.

In this paper, current data for nursing homes is analyzed. The two major federal data sets for nursing home facility and resident characteristics, plus similar information collected in one major state, Illinois, are reviewed. Data elements obtained and their definitions are compared and, finally, recommendations made as to how to improve the present situation.

Nursing Home Data Sources

National Nursing Home Survey

The National Nursing Home Survey (NNHS) is a continuing series of national sample surveys of nursing homes, their residents and staffs by the National Center for Health Statistics (NCHS). Three surveys have taken place, in 1973-74, 1977 and 1985. No plans have yet been announced for a fourth survey.

The surveys employ a stratified two-stage probability design, first the selection of facilities, then the selection of residents and employees. Data has been collected using both personal interviews and forms for self-completion. In 1985, added information was collected from relatives of residents, the "next of kin" questionnaire. In 1977 and 1985, a sample was also taken of persons discharged from the home in the past year, whether alive or dead.

The NNHS is the only national survey which includes variables for individuals which can be analyzed against each other. Other sources group data, which cannot be crosstabbed or correlated.

All data is available on tape from the National Center for Health Statistics. Figure 1 shows the available variables. Tapes are also available for the states of California, Illinois, Massachusetts, New York and Texas. More cases were provided in these states so that reliable estimates could be made.

Results appear in written form in Vital and Health Statistics, Series 13, Nos. 97, 98, 102, 103, and 115 plus Advance Data, Nos. 131, 135, 142, 147, and 152 from NCHS.

Figure 1
SUMMARY OF 1985 NNHS DATA TAPES BY TYPE OF FILE

Facility file	
Facility number	
Ownership code	
Number of beds (1985 and 1984)	
Certification status	
Per diem rates by certification status	
Admissions (1984)	
Residents days (1984)	
Services offered to rsidents	
Services offered to non-residents	
Physician service arrangements	
Full- and part-time staff	
Part-time staff hours	
Nursing staff hours	
Volunteer staff	
Geographic region recode	
DHHS administrative regions	
MSA recode	
Facility weight	
Record length	665
Block size	19,950
Number of records	1,078

Resident file	
Facility number	
Age	
Sex	
Race	
Hispanic origin	
Marital status at admission and currently	
Living children	
Date of last admission	
Residence before admission	
Hospital stays while a resident	
Previous nursing home stays	
Diagnoses at admission and currently	
Mental disorders	
Therapy services received	
Vision and hearing status	
Activities of daily living	
Adapted instrumental activities daily living	
Behavioral problems	
Disorientation or memory impairment	
Deprssion, anxiety, fearfulness, or worry	
Sources of payment at admission and last month	
Total monthly charge for care last month	
Amount paid by source last month	
Resident weight	
Record length	873
Block size	17,460
Number of records	5,238

Discharge file	
Facility number	
Age at discharge or date of birth	
Sex	
Race	
Hispanic origin	
Marital status at admission and at discharge	
Date of admission and discharge	
Discharge status (alive/dead)	
Residence before admission	
Residence after discharge for live discharges	
Hospital stays while a resident	
Nursing home stays before and after sample stay	
Diagnoses at admission and at discharge	
Mobility staff	
Continence status	
Sources of payment at admission and at discharge	
Discharge weight	
Record length	544
Block size	21,760
Number of records	6,017

Nursing staff file	
Facility number	
Member of staff or other arrangement	
Type of position	
Length of work experience	
Hours worked	
Salary	
Services performed	
Employment conditions	
Sex and age	
Ethnicity	
Marital status	
Children living at home	
Education	
Staff weight	
Record length	307
Block size	21,490
Number of records	2,760

Expense file	
Facility number	
Expenses and revenues	
Expense weight	
Record length	366
Block size	18,300
Number of records	731

Inventory of Long-Term Care Places
The federal Inventory of Long-Term Care Places (ILTCP), formerly part of the National Master Facility Inventory (NMFI), was conducted in 1986 by the Census Bureau for the National Center for Health Statistics. This differs from the NNHS in that the entire sample of "nursing and related care homes" is covered. Variables are limited to ownership, certification status, number of beds, residents, and race of residents. Information on residents is tabulated in grouped data for reporting.

One way that the ILTCP differs from the NNHS is that special homes for the mentally ill, developmentally disabled, and other groups with special handicaps are included.

Also available on tape from NCHS, the full set of variables is shown in Figure 2. Both the NNHS and ILTCP are also available through the Inter-University Consortium for Political and Social Research.

Figure 2
SUMMARY OF NATIONAL MASTER FACILITY INVENTORY DATA TAPES BY TYPE OF FACILITY

Hospitals							Nursing homes and other health facilities			
Name Name of administrator Ownership Type of facility Number of beds Days of care Discharge Admissions Type of service Outpatient visits Employees facilities and service offered							Name Adress Number of beds Ownership Type of facility Ages served Sexes served Number of residents			
	1971	1972	1973	1974	1975	1976		1971	1973	1976
Record length	840	748	748	748	748	748	Record length	600	196	210
Block size	8,400	4,488	4,488	4,488	4,488	4,488	Block size	3,600	1,176	6,720
Number of records	7,678	7,480	7,438	7,370	7,336	7,271	Number of records	26,773	26,003	26,748
Number of reels	1	1	1	1	1	1	Number of reels	1	1	1

Illinois Annual Survey of Long-Term Care Facilities
Most states collect data on their nursing homes and their residents. This is usually made necessary for the state's licensure certification or planning functions. Illinois is typical. The Illinois Department of Public Health (IDPH) has conducted annual surveys of long-term care facilities since 1981. These surveys are carried out under the state's Certificate of Need Act which authorizes data collection for planning purposes.

In addition to using the data to create an inventory of long-term care services and bed need plan, IDPH makes survey data available to others who have an interest in long-term care, both public and private. Other state agencies also constitute a major user.

The Illinois survey format is relatively standardized year to year with supplemental "special" studies each year. Nearly a thousand licensed facilities (including mental health/DD) receive the questionnaires and participation is almost universal.

UICOM-R Long-Term Care Report
The Health Services Research office of the University of Illinois College of Medicine at Rockford has created reports characterizing nursing homes in northwest Illinois. These reports, completed in 1980, 1985 and 1990, utilize information from the IDPH Long-Term Care Facility Survey.

This effort is notable because few local area studies are conducted which track changes in the industry on a local area basis. State reports generally do not evaluate long-term changes or focus on regional differences.

Data Elements
In this section, certain data elements have been selected to illustrate the availability of nursing home data, so as to reveal potential sources, their differing methods of gathering, commonalities and differences in definition.

What Is a Nursing Home?
Defining a nursing home is not a clear and simple task. The NNHS includes all types of "nursing homes" regardless of their level of care, participation in Medicare or Medicaid or licensure. No "Board and Care" homes were included or those providing residential care. They define nursing home as:

> Facilities with three or more beds that provide to adults who require either nursing care or personal care (such as help with bathing, correspondence, walking, eating, using the toilet, or dressing) and/or supervision over such activities as money management, ambulation, and shopping. Facilities providing care solely to the mentally retarded and mentally ill are excluded. A nursing home may be either freestanding or a distinct unit of a larger facility.

Illinois relies on licensure for its survey definition. In Illinois, a nursing home is defined as a: "private home, institution, building, residence, or any other place which provides personal care, sheltered care or nursing for three or more persons who are not related to the owner."

Long-term care institutions in Illinois are further classified into two types of care, nursing and sheltered care.

Nursing care includes the provision of diagnostic, therapeutic and rehabilitative care under a patient's plan of care as prescribed by a physician. In addition to the medically oriented care given by nurses and the living assistance given by aides, other services commonly provided by a facility that provides nursing care includes physical therapy, speech therapy, occupational therapy and social activities. There are two levels of nursing care, skilled and intermediate, with the levels differing in the amount of available nursing expertise and supervision provided to residents.

Sheltered care includes the provision of personal care and support in daily activities with limited nursing consultation available, such as the taking of medications.

The term "sheltered care" is somewhat unique to Illinois. Other states tend to utilize the terms "assisted living" or "personal care."

The federal NNHS survey relies on Medicare/Medicaid definitions for designation of skilled or intermediate care levels. Other beds are shown as "not certified."

Both units of government agree in that a facility must have three beds and provide nursing or personal care. Illinois does not consider personal care to determine a nursing home unless there is nursing consultation, such as the taking of medication. Terms common to definitions such as nursing care and personal care are not precisely defined.

Another area for possible confusion is whether facilities such as those for the mentally ill or developmentally disabled are counted. The NNHS excludes these. The ILTCP includes them as does Illinois. The ILTCP, which begins with categories similar to the NNHS, goes beyond these categories to also include homes for unwed mothers, substance abuse, orphans and the terminally ill (hospice).

In general, the definition of nursing home in this country is still imprecise, leaving board and care, congregate living and certain retirement centers and specialized facilities in a zone of uncertainty.

Beds
Beds are classified in various ways such as licensed or unlicensed, set-up and staffed, or occupied. The NNHS and ILTCP both primarily use set-up and staffed, while Illinois uses licensed beds. Licensed beds usually reflect capacity whether actually used or not.

The creation of swing beds and distinct unit skilled nursing beds at hospitals has increased in recent years. Swing beds are those that can be used for either acute or extended care through reclassification of the patient who doesn't actually move from the bed. Swing beds are certified by the Medicare program. Distinct units provide only extended care. For the most part they are utilized for hospital patients no longer needing acute hospital nursing care but who are not yet

well enough to return home. Under the "DRG" reimbursement system, hospitals benefit financially from discharges to a lower level of service.

The NNHS totally excludes hospital-based beds. On the other hand, the ILTCP includes long-term care units in hospitals. Presumably this includes both swing beds and distinct units. Illinois counts distinct units as a "nursing home" category, but does not consider swing beds in this category.

As is probably obvious, counts of beds can differ greatly according to the counting method. Figure 3 shows some of these conflicting counts.

Figure 3
COMPARISON OF BED COUNTS: NNHS, ILTCP, AND IDPH

Nursing Homes in U.S.

Total	NNHS	ILTCP
Nursing Care	14,400	16,388
Hospitals		734
Not Certified	4,700	
Residential		9,258

Nursing Homes in Illinois

Total	ILTCP	IDPH
Nursing Care	744	898
Hospital Based	25	734
Residentia	48	

Admission, Discharge and Stay
Length of stay is important for policy decisions and planning of resources, not to mention actuarial calculations such as those for the long-term care insurance industry. Average length of stay cannot be calculated with ease as is done in hospitals:

$$\text{Patient Days} = \text{Average Length}$$
$$\text{Discharges} \quad \text{of Stay}$$

Nursing home stays more often cross multiple years and may involve intervening hospital stays.

The ILTCP collects annual admissions and number of "residents last night." Average length can only be calculated if the assumption is made that "residents last night" times 365 = an estimate of patient days. IDPH collects patient days, admissions and discharges so that an estimate of average length of stay can be calculated. Again, the year to year crossover can be a problem in such calculations.

The NNHS is far more precise in its treatment of stay length. This is important because a good source is needed which differentiates the characteristics of stay types, especially the nature of post-hospital short stays from longer term chronic type stays. The differing nature of different "types" of nursing home residents is important for policy.

The NNHS provides for a question on duration of stay at discharge. Recently they have reconsidered this indicator of stay length in favor of the long-term care use history of individuals. An individual may be admitted and discharged several times a year and, in fact, that pattern has been found to be common.

Additionally, nursing homes treat stay definitions differently, especially with regard to temporary transfers to hospitals. Some consider the movement to be a discharge with formal readmission on return, while others make no such change in

status. Some facilities include the hospital stay as part of the stay, while others exclude them or calculate "bed-hold" days. Illinois provides no instructions on how to deal with the reporting of "bed-hold" days. This is left to the institution.

Another element of admissions and discharges is the place of origin and discharge - Where are residents coming from? and Where are they going? The ILTCP does not collect this, but both the NNHS and Illinois do. The NNHS collects "living arrangement prior to admission and after discharge," while Illinois asks for "admissions from" and "discharges to." The categories are similar except that the NNHS is far more precise in terms of home residence. A comparison is shown below in Figure 4.

Figure 4
LTC ADMISSIONS AND DISCHARGES COMPARISON OF NNHS AND IDPH

NNHS	IDPH
Own Home or Apartment	Private Residences
Relative's Home or Apartment	
Other Private Home or Apartment	
Retirement Home	
Boarding House, Room	
Other Nursing Home	Other Nursing Home
General Hospital	General Hospital
Mental Hospital	Psychiatric Hospital
	State Mental Health Facility
	Community Mental Health Residences
Chronic Disease	
Hospice	
Other	Other

Resident Demographic Characteristics
Recording the demographic characteristics of residents provides an essential component of any description or analysis of the nursing home industry. Age, race, and sex constitute the core of these descriptors.

Birthdate of the resident is collected by the NNHS, allowing any age groupings. The ILTCP utilizes three groups: 0-21, 22-64 and 65+. IDPH provides for seven groups: 0-17, 18-44, 45-59, 60-64, 65-74, 75-84 and 85+. Sex (gender) is collected by the NNHS and IDPH, but not the ILTCP. Nursing homes tend to be dominantly female.

Like many of these data elements, race is classified three different ways. The NNHS applies the usual census format in which race (white, black, American Indian, and Asian) is a separate variable from ethnic origin (Hispanic). Illinois, however, uses combined racial/ethnic groupings (white, non-Hispanic; black, non-Hispanic; Asian, non-Hispanic; and Hispanic). The ILTCP collects only the number of black and Hispanic residents, no other racial groups.

Two resident elements in the NNHS only are marital status (current and at admission) and number of living children.

Health and Activity
Health of the individual is often expressed either through categorization of the major condition or disease resulting in the admission or indications of which activities of daily living (ADLs).

The ILTCP does not record diagnosis at all. Illinois utilizes groupings of ICD-9 codes such as "Diseases of the Circulatory System" or "Musculoskeletal Diseases." The NNHS lists certain common reasons for nursing home placement such as Stroke, Hip Fracture and Alzheimer's Disease. The NNHS also collects indicators of health status prior to admission, including DRG if hospitalized.

Figure 5
DEMOGRAPHIC CHARACTERISTICS OF NURSING HOME RESIDENTS

Indicator	NNHS	ILTCP	IDPH
Age	Individual Years Collected	0 - 21 22 - 64 65+ Grouped Only	0 - 17 18 - 44 45 - 59 60 - 64 75 - 84 85+ Grouped Only
Sex	Yes	No	Yes
Race/Ethnic	White, Black, Amer. Indian, Asian Hispanic	Black, Hispanic Only	White, non-Hisp. Black, non-Hisp. Asian, non-Hisp. Hispanic
Marital Status	Yes, current and at admission	No	No
Living Children?	Yes	No	No

Figure 6
HEALTH AND ACTIVITY STATUS VARIABLES FOR NURSING HOME RESIDENTS

Indicator	NNHS	ILTCP	IDPH
Activities of daily living (ALDs)	Bathing Dressing Eating Walking Inside Walking Outside Toileting Transfer	Bathing Dressing Eating Walking Medication Shopping or Letter Writing	Bathing Dressing Eating Mobility Toileting Orientation
Diagnosis	DRG if Hospitalized Disease or Condition Resulting in Admission 15 Catergories such as Hip Fractures; Prior Health Status	No	15 Groupings of ICD-9

Payment Source
The ways that residents pay for care is an important issue in the delivery of care. The ILTCP does not collect payment source. All sources of payment are indicated on the NNHS, while IDPH obtains only major payment source. The NNHS includes insurance within private pay, while IDPH breaks it out.

Nursing Home Trends
Despite their drawbacks and lack of standardization, the studies reviewed in this report can be used to form a picture of trends in nursing homes and their residents. The focus in this section is on recent changes in the industry.

Figure 7
PAYMENT SOURCE VARIABLES FOR NURSING HOME RESIDENTS

NNHS	IDPH
Medicare	Medicare
Medicaid	Medicaid
Private (own) Pay	Private (own) Pay
VA	VA
State Agency	State Agency
Other Public Pay	Other Public Pay
Church, Foundation, Agency	Insurance
Life Care Funds	

ILTCP (1967-1986 unless otherwise noted)

* The number of nursing homes nationally grew 18.2%.

* The number of nursing home beds grew 105.0%.

* The number of nursing home residents grew 106.5%.

* Persons 65+ in nursing homes grew 45.5% from 1967-1976, but then declined 6.2% from 1976 to 1986.

* Occupancy stayed around 92%.

NNHS (1977-85 unless otherwise noted)

* The number of elderly patients discharged from hospitals to nursing homes increased 36% from 1982 to 1985.

* The proportion of nursing homes affiliated with a nursing home chain rose significantly 1977-85 from 28% to 41% of all facilities.

* Discharges rose 9.5%.

* Women in nursing homes aged 85+ rose from 34% to 41% of residents.

* Race and ethnic status was obtained for the first time in 1985. Minorities were underrepresented and generally younger than the white population.

* The proportion of individuals not dependent on help for mobility or continence dropped from 40.1% to 30.1%.

* Medicare-covered days in skilled nursing facilities per 1,000 beneficiaries dropped from 370 in 1977 to 320 in

1984.

* Residency in a nursing home for persons 85+ dropped from 257 per 1,000 in 1974 to 220 in 1985.

* The average length of stay rose from 2.7 to 2.9 years.

* The proportion of nursing home residents with mental disorders rose, while circulatory disorders fell.

UICOM-R (IDPH Data for Northwest Illinois)

* The ratio of beds per thousand population 65+ fell from 92.9 in 1980 to 85.9 in 1990. The elderly population is increasing more rapidly than the facilities for care. About 6.3% of persons aged 65 years and up reside in area long-term care facilities, down from 7.3% a decade ago.

* The overall annual occupancy of general long-term care facilities in northwest Illinois is 87.3% based on beds licensed. Occupancy rates have increased since 1980 when the corresponding rate was 84.4%.

* Just under half (47.7%) of northwest Illinois long-term care facilities are owned by for-profit concerns, down from 60.0% in 1981. The remainder are owned by churches (18.5%), government (13.9%) and not-for-profit corporations (20.0%).

* Hospitals are increasingly entering the long-term care "business." Nine of the fifteen hospitals in northwest Illinois have swing beds or distinct units.

* Most general long-term care residents are age 75 or older (81.0%), female (75.2%), and white (97.3%). Residents aged 85 and over made up 47.7% of residents in 1990 but only 39.2% in 1980. The median age is now estimated to be 84.3 years, up from 82.1 in 1981.

* Leading admission diagnoses include the circulatory system (28.6%), nervous system (13.8%), and musculoskeletal (11.8%). One in ten residents is reported to have Alzheimer's disease. Mental illness, nervous system and musculoskeletal have risen, circulatory has declined.

* Nursing home residents are highly dependent on others for performing certain activities of daily living (ADLs) including bathing (62.8%) and toileting (56.6%). Dependency rates have been increasing.

* Medicaid was the source of payment for 46.4% of the long-term care residents in 1989. Private payers covered 48.9%. Some of the remainder were covered by Medicare (2.7%). Medicaid coverage has been rising.

* The average daily charge for a skilled care double bed in 1990 was $73, up from $48 in 1985. Intermediate care averaged $56 for a double, up from $41 in 1985. Many institutions make additional charges for supplementary services as rehabilitation therapies, bandages, or assistance in bathing.

* 65.2% of area beds are certified for Medicaid residents, but only 6.3% are certified for Medicare. Medicare certification has been stable or declining.

Improving Nursing Home Data

OBRA Data Requirements

Beginning this year, all nursing homes certified to provide care under Medicare or Medicaid must use assessment instruments required by the state and approved by HCFA. The instrument must include a uniform minimum data set (MDS) of care screening and assessment elements with common definitions. The MDS contains a comprehensive set of data elements which describe most nursing home residents nationally. If modified to add certain elements, the MDS could form the core of a standardized instrument which could be collected and analyzed on a national basis to analyze the characteristics of nursing home residents (see Figure 8).

Other Sources

For homes certified by Medicare or Medicaid, financially-centered reports are filed with government or a fiscal intermediary. These "cost reports" generally include a great deal of information on the nature of the facility.

Conclusion

As has been shown in this paper, data describing nursing homes nationally is haphazard at best, and lacking in standardization of definitions. Sources usually cannot be compared to each other, because of differing coverage, variables, and definitions. Of the two federal sources, one is a periodic sample which is relatively comprehensive, which employs several sub-component studies. The other is a periodic census with relatively sparse variables. Neither follows a regular schedule. One was last completed in 1985 and the other in 1986. No immediate plans are currently in place for repeating these studies so as to yield more timely data.

Another data source is the surveys performed by individual states. Most states have annual surveys of the type exemplified by Illinois. States could form the framework for regular assessments of nursing homes as long as guidelines for definition and collection are put forward by the federal government. Much like the vital statistics system operates, states could report to the National Center for Health Statistics, which could compile the information.

Long-term care is too important a component of health care not to have systematic data reporting. Action is needed in this direction.

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